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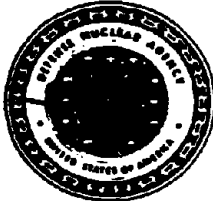
DEFENSE NUCLEAR AGENCY EFFECTS MANUAL NUMBER 1

# CAPABILITIES OF NUCLEAR WEAPONS

1 JULY 1972

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# CAPABILITIES OF NUCLEAR WEAPONS

## PART II DAMAGE CRITERIA

HEADQUARTERS  
Defense Nuclear Agency  
Washington, D.C. 20305

EDITOR  
PHILIP J. DOLAN  
STANFORD RESEARCH INSTITUTE



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PART II  
CHANGE 1  
1 JULY 1978**

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**PART II  
DAMAGE CRITERIA**

**HEADQUARTERS  
Defense Nuclear Agency  
Washington, D.C. 20305**

**EDITOR  
PHILIP J. DOLAN  
SRI INTERNATIONAL**

## LIST OF EFFECTIVE PAGES

The following is a list of current pages for Part II. *Damage Criteria*, of DNA Effects Manual Number 1 (DNA EM-1). *Capabilities of Nuclear Weapons*. When applicable, insert latest change pages; dispose of superceded pages in accordance with applicable regulations.

Total number of pages in this part of the Handbook is            consisting of the following:

i through ii	.....	change 1
iii through xlvi	.....	original
9-1 through 9-188	.....	original
10-1 through 10-38	.....	original
11-1 through 11-148	.....	original
12-1 through 12-32	.....	original
13-1 through 13-88	.....	original
14-1 through 14-76	.....	original
15-1 through 15-64	.....	original
16-1 through 16-122	.....	original
17-1 through 17-40	.....	original
A-1 through A-18	.....	original
B-1 through B-8	.....	original
C-1 through C-16	.....	original
D-1 through D-16	.....	change 1
E-1 through E-20	.....	original
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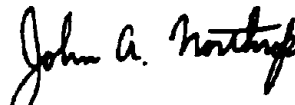
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EFFECTS MANUAL NUMBER 1  
CAPABILITIES OF NUCLEAR WEAPONS [REDACTED]

The Revised Edition January 1968, *Capabilities of Nuclear Weapons* [REDACTED] DASA EM-1 is hereby superseded and cancelled.

With the concurrence of the Military Services, this document was redesignated DASA Effects Manual Number 1 (DASA EM-1) by action of the Joint Chiefs of Staff on 8 July 1966. With the change of the Defense Atomic Support Agency to the Defense Nuclear Agency on 1 July 1971, this document was redesignated the DNA Effects Manual Number 1 (DNA EM-1). Publication and initial distribution of future changes and revisions of this document will be effected by the Defense Nuclear Agency.

FOR THE DIRECTOR:



JOHN A. NORTHROP  
Deputy Director (Science & Technology)

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## FOREWORD

This edition of the *Capabilities of Nuclear Weapons* represents the continuing efforts by the Defense Nuclear Agency to correlate and make available nuclear weapons effects information obtained from nuclear weapons testing, small-scale experiments, laboratory effort and theoretical analysis. This document presents the phenomena and effects of a nuclear detonation and relates weapons effects manifestations in terms of damage to targets of military interest. It provides the source material and references needed for the preparation of operational and employment manuals by the Military Services.

The *Capabilities of Nuclear Weapons* is not intended to be used as an employment or design manual by itself, since more complete descriptions of phenomenological details should be obtained from the noted references. Every effort has been made to include the most current reliable data available on 31 December 1971 in order to assist the Armed Forces in meeting their particular requirements for operational and target analysis purposes.

Comments concerning this manual are invited and should be addressed:

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Defense Nuclear Agency  
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Washington, D. C. 20305



C. H. DUNN  
Lt General, USA  
Director

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## TABLE OF CONTENTS

### PART I PHENOMENOLOGY

CHAPTER 1 INTRODUCTION [REDACTED]		<i>Page</i>
PURPOSE .....		1-1
CHARACTERISTICS OF NUCLEAR EXPLOSIONS .....		1-1
AIR BURST .....		1-7
THE SURFACE BURST .....		1-12
THE TRANSITION ZONE BETWEEN AN AIR BURST AND A SURFACE BURST ..		1-14
THE HIGH-ALTITUDE BURST .....		1-15
THE UNDERGROUND BURST .....		1-20
THE UNDERWATER BURST .....		1-23
CHAPTER 2 BLAST AND SHOCK PHENOMENA [REDACTED]		
INTRODUCTION .....		2-1
SECTION I AIR BLAST PHENOMENA .....		2-1
RELIABILITY .....		2-2
BLAST-WAVE CALCULATIONS IN FREE AIR .....		2-4
RELATIONS BETWEEN SHOCK FRONT PARAMETERS .....		2-21
BLAST-WAVE PHENOMENA AT THE SURFACE .....		2-38
BLAST-WAVE CALCULATIONS AT THE SURFACE .....		2-45
THE BLAST WAVE AT HIGH ALTITUDES .....		2-125
WEAPONS WITH ENHANCED OUTPUTS [REDACTED] .....		2-138
SECTION II CRATERING PHENOMENA .....		2-147
PREDICTION OF CRATER DIMENSIONS .....		2-152
EJECTA .....		2-168
CHARGE STEMMING .....		2-173
EFFECTS OF GEOLOGICAL FACTORS .....		2-174
MULTIPLE BURST GEOMETRIES .....		2-174
SECTION III GROUND SHOCK PHENOMENA .....		2-176

**TABLE OF CONTENTS (Continued)**

**CHAPTER 2 BLAST AND SHOCK PHENOMENA (Continued)**

	<i>Page</i>
<b>SECTION IV UNDERWATER EXPLOSION PHENOMENA</b> .....	2-193
WATER SHOCK WAVE AND OTHER PRESSURE PULSES .....	2-197
SURFACE EFFECTS OTHER THAN WAVES .....	2-203
WATER SURFACE WAVES .....	2-216
UNDERWATER CRATERING .....	2-223

**CHAPTER 3 THERMAL RADIATION PHENOMENA**

RADIANT EXPOSURE .....	3-1
TRANSMITTANCE .....	3-5
APPROXIMATE CALCULATIONS OF RADIANT EXPOSURE .....	3-37
SURFACE AND SUBSURFACE BURSTS .....	3-42
THE THERMAL PULSE .....	3-46
FIREBALL BRIGHTNESS .....	3-55
THE THERMAL PULSE FROM SPECIAL WEAPONS .....	3-56
HIGH ALTITUDE THERMAL PHENOMENA .....	3-63
RELIABILITY OF THERMAL SOURCE DATA .....	3-72
RELATION OF RADIANT EXPOSURE TO PEAK OVERPRESSURE .....	3-74
PHYSICS OF FIREBALL DEVELOPMENT .....	3-104

**CHAPTER 4 X-RAY RADIATION PHENOMENA**

INTRODUCTION .....	4-1
<b>SECTION I NUCLEAR WEAPONS AS X-RAY SOURCES</b> .....	4-9
<b>SECTION II X-RAY ENVIRONMENTS PRODUCED BY NUCLEAR WEAPONS</b> ...	4-25

**CHAPTER 5 NUCLEAR RADIATION PHENOMENA**

INTRODUCTION .....	5-1
<b>SECTION I INITIAL NUCLEAR RADIATION</b> .....	5-1



[REDACTED]

## TABLE OF CONTENTS (Continued)

<b>CHAPTER 5 NUCLEAR RADIATION PHENOMENA [REDACTED] (Continued)</b>		<i>Page</i>
NEUTRONS .....		5-2
GAMMA RAYS .....		5-17
INITIAL RADIATION DOSE TO PERSONNEL .....		5-24
SECTION II NEUTRON-INDUCED ACTIVITY IN SOILS .....		5-52
SECTION III RESIDUAL RADIATION .....		5-65
FALLOUT .....		5-65
RESIDUAL RADIATION FROM WATER SURFACE AND UNDERWATER BURSTS .....		5-104
DOSE RECEIVED WHILE FLYING THROUGH A NUCLEAR CLOUD .....		5-139
PRECIPITATION EFFECTS .....		5-145
 <b>CHAPTER 6 TRANSIENT RADIATION EFFECTS ON ELECTRONICS (TREE) PHENOMENA [REDACTED]</b>		
INTRODUCTION .....		6-1
ENVIRONMENT .....		6-3
INTERACTIONS BASIC TO TREE .....		6-6
MANIFESTATIONS OF TREE IN MATERIALS .....		6-10
 <b>CHAPTER 7 ELECTROMAGNETIC PULSE (EMP) PHENOMENA [REDACTED]</b>		
ENVIRONMENT - GENERAL DESCRIPTION .....		7-1
ELECTROMAGNETIC FIELD GENERATION .....		7-5
INTERNAL EMP .....		7-15
COMPUTER CODE DESCRIPTIONS .....		7-17
SYSTEMS EFFECTS .....		7-18
 <b>CHAPTER 8 PHENOMENA AFFECTING ELECTROMAGNETIC WAVE PROPAGATION [REDACTED]</b>		
INTRODUCTION .....		8-1

**TABLE OF CONTENTS (Continued)**

**CHAPTER 8 PHENOMENA AFFECTING ELECTROMAGNETIC  
WAVE PROPAGATION (Continued)**


	<i>Page</i>
<b>SECTION I PHENOMENA AFFECTING RADIO FREQUENCIES</b> .....	8-2
<b>IONIZATION AND DEIONIZATION</b> .....	8-2
<b>TRAVELING DISTURBANCES IN E AND F REGIONS OF IONOSPHERE</b> .....	8-15
<b>ELECTROMAGNETIC RADIATIONS</b> .....	8-16
<b>ABSORPTION</b> .....	8-16
<b>PHASE CHANGES</b> .....	8-20
<b>SECTION II METHODS FOR CALCULATING ABSORPTION OF RADIO FREQUENCIES</b> .....	8-23

**PART II DAMAGE CRITERIA**

**CHAPTER 9 INTRODUCTION TO DAMAGE CRITERIA**

<b>SECTION I CONTENT AND LIMITATIONS OF PART II</b> .....	9-1
9-1 Introduction to Chapter 9 .....	9-1
9-2 Organization of Part II .....	9-1
9-3 Limitations in Part II .....	9-2
<b>SECTION II BLAST AND SHOCK DAMAGE</b> .....	9-2
<b>LOADING</b> .....	9-3
9-4 Air Blast Loading in the Mach Reflection Region .....	9-3
9-5 Qualitative Examples of Net Loading .....	9-4
9-6 Regular and Mach Reflection .....	9-10
9-7 Target Motion .....	9-10
9-8 Nonideal Waveforms .....	9-10
9-9 Underwater Shock Wave Loading .....	9-10
9-10 Ground Shock Loading .....	9-11
<b>RESPONSE AND DAMAGE</b> .....	9-11
9-11 Surface Structures .....	9-11
9-12 Shielded Structures .....	9-13
9-13 Aircraft .....	9-13
<b>SECTION III THERMAL RADIATION DAMAGE</b> .....	9-13
<b>INTRODUCTION</b> .....	9-13
9-14 Radiant Exposure .....	9-14
9-15 Thermal Pulse Duration .....	9-14

  
**TABLE OF CONTENTS (Continued)**

<b>CHAPTER 9 INTRODUCTION TO DAMAGE CRITERIA</b>  <b>(Continued)</b>		<i>Page</i>
9-16 Target Response .....		9-14
9-17 Target Orientation .....		9-15
9-18 Shielding .....		9-15
<b>THERMAL RESPONSE OF MATERIALS</b> .....		9-15
9-19 Thickness Effects .....		9-16
9-20 Color .....		9-22
9-21 Transparency .....		9-23
9-22 Effect of Humidity .....		9-23
9-23 Response of Metal Sheets .....		9-25
9-24 Thermal Damage to Various Materials .....		9-25
<b>SURVIVAL IN FIRE AREAS</b> .....		9-28
9-25 Causes of Death .....		9-28
9-26 Shelters .....		9-29
9-27 Escape from the Fire Areas .....		9-30
9-28 Safe Areas Within the Fire .....		9-31
<b>SECTION IV THERMAL RADIATION DEGRADATION OF STRUCTURAL RESISTANCE TO AIR BLAST</b> .....		9-31
<b>THERMAL ENERGY ABSORBED</b> .....		9-32
9-29 Absorption .....		9-32
9-30 Energy Losses .....		9-35
<b>CHANGES IN MATERIAL STATE AND MATERIALS PROPERTIES</b> .....		9-38
9-31 Changes in Material State .....		9-38
9-32 Change in Materials Properties .....		9-46
<b>RESISTANCE TO LOAD</b> .....		9-63
<b>SECTION V X-RAY DAMAGE EFFECTS</b> .....		9-67
<b>INTRODUCTION</b> .....		9-67
<b>X-RAY ENERGY DEPOSITION CALCULATIONS</b> .....		9-68
9-33 X-ray Cross Sections .....		9-68
9-34 X-ray Energy Deposition and Shine Through Fluences .....		9-69
9-35 X-ray Energy Deposition Summary .....		9-93
<b>INITIAL PRESSURIZATION OF MATERIALS DUE TO X-RAY DEPOSITION</b> .....		9-93
9-36 Phase Changes Induced by X-ray Heating .....		9-93
9-37 The Gruneisen Parameter and the Equation of State .....		9-101
<b>SHOCK WAVE PROPAGATION AND DAMAGE PREDICTIONS</b> .....		9-103
9-38 Through-the-Thickness Elastic-Plastic Shock Propagation .....		9-105

**TABLE OF CONTENTS (Continued)**

<b>CHAPTER 9 INTRODUCTION TO DAMAGE CRITERIA (Continued)</b>		<i>Page</i>
9-39 Through-the-Thickness Material Response .....		9-107
<b>IMPULSE AND STRUCTURAL RESPONSE ANALYSIS</b> .....		9-107
9-40 Impulse Calculations .....		9-107
9-41 Structural Response Analysis .....		9-115
<b>REENTRY VEHICLE HARDENING</b> .....		9-115
9-42 Balanced Hardening with Respect to Neutrons and X-rays .....		9-116
9-43 X-ray Hardening Concepts .....		9-116
<b>SECTION VI NUCLEAR RADIATION SHIELDING</b> .....		9-118
<b>SECTION VII TREE - COMPONENT PART AND CIRCUIT RESPONSE</b> .....		9-121
<b>SEMICONDUCTOR COMPONENT PARTS</b> .....		9-122
9-44 Transient Effects .....		9-122
9-45 Permanent Effects .....		9-132
9-46 Heating and Thermomechanical Damage .....		9-140
<b>OTHER ELECTRONIC COMPONENT PARTS</b> .....		9-147
9-47 Electron Tubes .....		9-147
9-48 Capacitors .....		9-149
9-49 Resistors .....		9-151
9-50 Batteries and Cables .....		9-151
9-51 Quartz Crystals .....		9-153
9-52 Solder Joints .....		9-154
9-53 Infrared Detectors .....		9-154
<b>ELECTRONIC CIRCUITS</b> .....		9-155
9-54 Radiation Response of Discrete-Component-Part Circuits .....		9-155
9-55 Radiation Response of Integrated Circuits .....		9-158
<b>SECTION VIII ELECTROMAGNETIC PULSE (EMP) DAMAGE MECHANISMS</b> .....		9-170
<b>ENERGY COUPLING</b> .....		9-170
9-56 Basic Coupling Modes .....		9-170
9-57 Resonant Configurations .....		9-171
<b>COMPONENT DAMAGE</b> .....		9-172
9-58 Types of Damage .....		9-172
9-59 Damage Levels .....		9-173
<b>EMP HARDENING</b> .....		9-175
9-60 System Analysis .....		9-175
9-61 Recommended Practices .....		9-176
<b>TESTING</b> .....		9-178

[REDACTED]

## TABLE OF CONTENTS (Continued)

<b>CHAPTER 9 INTRODUCTION TO DAMAGE CRITERIA [REDACTED] (Continued)</b>		<i>Page</i>
9-62 Importance of Testing .....		9-178
9-63 Simulation Facilities .....		9-179
<b>BIBLIOGRAPHY</b> .....		9-183
 <b>CHAPTER 10 PERSONNEL CASUALTIES [REDACTED]</b> 		
<b>INTRODUCTION</b> .....		10-1
<b>SECTION I AIR BLAST</b> .....		10-1
<b>MECHANISMS AND CRITERIA FOR INJURY</b> .....		10-1
10-1 Direct Overpressure Effects .....		10-1
10-2 Translational Forces and Impact .....		10-2
10-3 Blast-Energized Debris .....		10-3
10-4 Miscellaneous Effects .....		10-3
<b>CASUALTY PREDICTION</b> .....		10-4
10-5 Personnel in the Open .....		10-4
10-6 Personnel in a Forest .....		10-4
10-7 Personnel in Structures .....		10-5
10-8 Personnel in Vehicles .....		10-5
<b>SECTION II THERMAL RADIATION</b> .....		10-10
<b>SKIN BURNS</b> .....		10-10
<b>CLASSIFICATION OF BURNS</b> .....		10-10
10-9 First Degree Burns .....		10-10
10-10 Second Degree Burns .....		10-10
10-11 Third Degree Burns .....		10-10
10-12 Reduction in Effectiveness by Burns .....		10-11
<b>BURN INJURY ENERGIES AND RANGES</b> .....		10-11
10-13 Personnel Parameters .....		10-11
10-14 Burn Exposures for Unprotected Skin .....		10-12
10-15 Burns Under Clothing .....		10-12
10-16 Body Areas Involved .....		10-12
10-17 Incapacitation from Burns .....		10-15
10-18 Modification of Injury .....		10-15
<b>EFFECTS OF THERMAL RADIATION ON THE EYES</b> .....		10-15
10-19 Flashblindness .....		10-15
10-20 Retinal Burns .....		10-15

[REDACTED]

## TABLE OF CONTENTS (Continued)

### CHAPTER 10 PERSONNEL CASUALTIES [REDACTED] (Continued)

	<i>Page</i>
10-21 Modification of Thermal Effects on the Eye .....	10-17
10-22 Safe Separation Distance Curves .....	10-17
<b>SECTION III NUCLEAR RADIATION .....</b>	<b>10-23</b>
<b>INITIAL RADIATION .....</b>	<b>10-23</b>
10-23 Radiation Sickness .....	10-23
10-24 Incapacitation .....	10-24
10-25 Modification of Injury .....	10-25
10-26 Military Assumptions .....	10-25
<b>RESIDUAL RADIATION .....</b>	<b>10-25</b>
10-27 External Hazards .....	10-25
10-28 Internal Hazards .....	10-31
10-29 Modification of Injury .....	10-31
<b>SECTION IV COMBINED INJURY .....</b>	<b>10-31</b>
10-30 Radiation and Thermal Injuries .....	10-32
10-31 Mechanical and Radiation Injuries .....	10-33
10-32 Thermal and Mechanical Injuries .....	10-33
<b>CASUALTY CRITERIA .....</b>	<b>10-33</b>
<b>PERSONNEL IN THE OPEN .....</b>	<b>10-33</b>
<b>PERSONNEL IN STRUCTURES .....</b>	<b>10-35</b>
<b>TREATMENT .....</b>	<b>10-35</b>
<b>BIBLIOGRAPHY .....</b>	<b>10-36</b>

### CHAPTER 11 DAMAGE TO STRUCTURES [REDACTED]

<b>INTRODUCTION .....</b>	<b>11-1</b>
<b>SECTION I DAMAGE TO ABOVEGROUND STRUCTURES .....</b>	<b>11-1</b>
<b>AIR BLAST EFFECTS .....</b>	<b>11-2</b>
11-1 Nature of Loading .....	11-2
11-2 Nature of Damage .....	11-3
11-3 Structural Characteristics .....	11-3
11-4 Isodamage Curves .....	11-9

**TABLE OF CONTENTS (Continued)**

**CHAPTER 11 DAMAGE TO STRUCTURES (Continued)**

	<i>Page</i>
11-5 Shallow Underground Bursts .....	11-12
11-6 Ground Shock and Cratering .....	11-12
<b>SECTION II DAMAGE TO BELOWGROUND STRUCTURES .....</b>	<b>11-40</b>
<b>STRUCTURES BURIED IN SOIL .....</b>	<b>11-40</b>
11-7 Definition of Burial Conditions .....	11-40
11-8 Deeply Buried Structures .....	11-41
11-9 Structures Buried at Shallow Depths .....	11-48
11-10 Intermediate Depths of Burial .....	11-49
<b>LINED AND UNLINED OPENINGS IN ROCK .....</b>	<b>11-49</b>
11-11 Definition of Damage to Openings in Rock .....	11-50
11-12 Types of Tunnel Linings .....	11-51
11-13 Procedures for Tunnel Vulnerability Evaluation .....	11-52
11-14 Vulnerability Evaluation of Surface Silos in Rock .....	11-55
<b>SECTION III SHOCK VULNERABILITY OF EQUIPMENT AND PERSONNEL .....</b>	<b>11-97</b>
11-15 Shock Mounting .....	11-97
11-16 Nature of Elastic Systems Comprised of Mounted Equipment .....	11-99
11-17 Design of Mounted Equipment to Resist Shock .....	11-99
11-18 Vulnerability Analysis .....	11-100
<b>SECTION IV DAMS AND HARBOR INSTALLATIONS .....</b>	<b>11-109</b>
<b>AIR BLAST .....</b>	<b>11-109</b>
11-19 Concrete Gravity Dams .....	11-109
11-20 Harbor Installations .....	11-109
<b>WATER SHOCK .....</b>	<b>11-109</b>
11-21 Concrete Dams and Water Locks .....	11-109
<b>CRATERING .....</b>	<b>11-109</b>
11-22 Cratering Earth Dams and Causeways .....	11-109
<b>WATER WAVES .....</b>	<b>11-110</b>
11-23 Impact and Hydrostatic Pressure .....	11-110
11-24 Drag Forces .....	11-110
11-25 Inundation .....	11-110
<b>THERMAL-RADIATION DAMAGE .....</b>	<b>11-110</b>
<b>SECTION V PETROLEUM, OIL, AND LUBRICANT (POL) STORAGE TANKS .....</b>	<b>11-110</b>
11-26 Damage Criteria .....	11-110
11-27 Loading and Response .....	11-111
11-28 Damage .....	11-111

[REDACTED]

## TABLE OF CONTENTS (Continued)

<b>CHAPTER 11 DAMAGE TO STRUCTURES</b> [REDACTED] <i>(Continued)</i>		<i>Page</i>
<b>SECTION VI FIELD FORTIFICATIONS</b> .....		11-118
11-29 Air Blast Damage .....		11-118
11-30 Protection of Fortifications from Air Blast Damage .....		11-118
11-31 Thermal Radiation Damage .....		11-121
<b>SECTION VII FIRE IN URBAN AREAS</b> .....		11-127
<b>INTRODUCTION</b> .....		11-127
<b>EVOLUTION OF MASS FIRES</b> .....		11-127
11-32 Ignition Points .....		11-127
11-33 Room Flashover .....		11-128
11-34 Active Burning of a Structure .....		11-128
11-35 Fire Spread Between Structures .....		11-128
11-36 Mass Fires .....		11-129
<b>ESTIMATION AND CONTROL OF THERMAL DAMAGE</b> .....		11-130
11-37 Radiant Exposure Thresholds .....		11-130
11-38 Fire Radii .....		11-134
11-39 The San Jose Study .....		11-134
11-40 The New Orleans Study .....		11-136
11-41 Effects of Clouds .....		11-138
11-42 Firestorm Criteria .....		11-143
11-43 Conflagrations .....		11-144
11-44 Fire Control .....		11-144
<b>BIBLIOGRAPHY</b> .....		11-146

### **CHAPTER 12 MECHANICAL DAMAGE DISTANCES FOR SURFACE SHIPS AND SUBMARINES SUBJECTED TO NUCLEAR EXPLOSIONS** [REDACTED]

<b>INTRODUCTION</b> .....		12-1
12-1 Damage Mechanisms .....		12-1
12-2 Damage Classification .....		12-1
12-3 Seaworthiness Impairment .....		12-1
12-4 Mobility Impairment .....		12-2
12-5 Weapon Delivery Impairment .....		12-2
<b>SECTION I DAMAGE TO SURFACE SHIPS FROM AIR BURSTS</b> .....		12-2
<b>BLAST DAMAGE</b> .....		12-2
12-6 General .....		12-2



**TABLE OF CONTENTS (Continued)**

**CHAPTER 12 MECHANICAL DAMAGE DISTANCES FOR SURFACE SHIPS  
AND SUBMARINES SUBJECTED TO NUCLEAR EXPLOSIONS (Continued)**

	<i>Page</i>
12-7 Damage Criteria .....	12-3
12-8 Damage Distances .....	12-3
12-9 Capsizing from Blast .....	12-6
DAMAGE FROM OTHER AIR BURST PHENOMENA .....	12-6
12-10 Thermal Radiation .....	12-6
12-11 Damage from Nuclear Radiation and Electromagnetic Pulse .....	12-8
12-12 (Omitted)	
SECTION II SURFACE SHIP DAMAGE FROM UNDERWATER BURSTS .....	12-8
DAMAGE FROM THE SHOCK WAVE IN THE WATER .....	12-8
12-13 Damage Criteria .....	12-8
12-14 Damage Distances .....	12-9
12-15 Effect of Ocean Environment on Damage Ranges .....	12-9
DAMAGE FROM OTHER UNDERWATER BURST PHENOMENA .....	12-17
SECTION III SUBMARINE DAMAGE FROM UNDERWATER BURSTS .....	12-17
DAMAGE FROM THE SHOCK WAVE IN THE WATER .....	12-17
12-16 Damage Criteria .....	12-17
12-17 Damage Distances .....	12-18
12-18 Effect of Ocean Environment on Damage Ranges .....	12-18
DAMAGE FROM OTHER UNDERWATER BURST PHENOMENA .....	12-19
BIBLIOGRAPHY .....	12-30

**CHAPTER 13 DAMAGE TO AIRCRAFT**

INTRODUCTION .....	13-1
SECTION I BLAST AND THERMAL EFFECTS ON AIRCRAFT .....	13-1
13-1 Sure-Safe and Sure-Kill Envelopes .....	13-2
NUCLEAR WEAPON EFFECTS ANALYSIS .....	13-4
13-2 Gust Effects .....	13-4
13-3 Overpressure Effects .....	13-7
13-4 Thermal Radiation Effects .....	13-7
13-5 Combined Effects .....	13-9
SECTION II AIRCRAFT RESPONSE TO BLAST AND THERMAL EFFECTS .....	13-10
AIRCRAFT RESPONSE TO GUST EFFECTS .....	13-10
13-6 Aerodynamic Coefficients for Aircraft .....	13-10

[REDACTED]

## TABLE OF CONTENTS (Continued)

### CHAPTER 13 DAMAGE TO AIRCRAFT [REDACTED] (Continued)

	<i>Page</i>
13-7 Gust Effects on In-Flight Aircraft .....	13-27
13-8 Gust Effects on Parked Aircraft .....	13-27
AIRCRAFT RESPONSE TO OVERPRESSURE EFFECTS .....	13-50
13-9 Overpressure Effects on In-Flight and Parked Aircraft .....	13-50
AIRCRAFT RESPONSE TO THERMAL RADIATION EFFECTS .....	13-59
13-10 Thermal Effects on In-Flight and Parked Aircraft .....	13-59
BURST-TIME ENVELOPES .....	13-67
13-11 Requirement for Burst-Time Envelopes .....	13-67
BIBLIOGRAPHY .....	13-86

### CHAPTER 14 DAMAGE TO MILITARY FIELD EQUIPMENT [REDACTED]

INTRODUCTION .....	14-1
SECTION I AIR BLAST DAMAGE .....	14-1
14-1 Damage Mechanisms .....	14-1
14-2 Air Blast Environment .....	14-2
14-3 Target Characteristics .....	14-4
14-4 Target Exposure .....	14-6
14-5 Effects of Ground Surface Conditions .....	14-12
14-6 Vehicle Status .....	14-14
SECTION II DAMAGE PREDICTIONS .....	14-17
14-7 Definitions of Damage Categories .....	14-17
14-8 Prediction Techniques .....	14-18
14-9 Untested Equipment .....	14-52
SECTION III DAMAGE FROM CAUSES OTHER THAN BLAST AND NUCLEAR RADIATION .....	14-57
14-10 Fire Damage .....	14-57
14-11 Obscuration of Optical Devices .....	14-58
14-12 Damage by Missiles .....	14-58
14-13 The Effects of Time .....	14-59
SECTION IV TREE DAMAGE CRITERIA .....	14-59
SYSTEMS ANALYSIS .....	14-60
14-14 Types of Systems Analysis Used in TREE .....	14-60

[REDACTED]

## TABLE OF CONTENTS (Continued)

### CHAPTER 14 DAMAGE TO MILITARY FIELD EQUIPMENT [REDACTED] (Continued)

	<i>Page</i>
14-15 The Complexity of Performing System Analysis for TREE .....	14-60
14-16 Characteristics of the Analysis Used in This Section .....	14-61
REVIEW OF ELECTRONIC SUSCEPTIBILITY TO NUCLEAR RADIATION .....	14-62
14-17 Component Part Vulnerability .....	14-62
14-18 Subsystem Vulnerability .....	14-64
TREE-DAMAGE ESTIMATES .....	14-64
14-19 Ground Equipment .....	14-65
14-20 An Example of Ground Equipment Survivability Estimation .....	14-65
14-21 Aircraft Systems .....	14-67
14-22 An Example of Aircraft Survivability Estimation .....	14-67
14-23 Missile Systems .....	14-70
BIBLIOGRAPHY .....	14-72

### CHAPTER 15 DAMAGE TO FOREST STANDS [REDACTED]

INTRODUCTION .....	15-1
SECTION I AIR BLAST .....	15-1
15-1 Forest Stand Types .....	15-1
15-2 Damage-Distance Relations .....	15-3
SECTION II TROOP AND VEHICLE MOVEMENT .....	15-41
15-3 Blowdown Debris Characteristics .....	15-42
15-4 Vehicle Movement .....	15-44
15-5 Troop Movement .....	15-46
15-6 Predicting Effects on Movement .....	15-49
SECTION III THERMAL RADIATION .....	15-52
15-7 Ignitions .....	15-52
15-8 Kindling Fuels .....	15-52
15-9 Thermal Radiation on Forests .....	15-56
15-10 Forest Fire Ignition and Spread .....	15-58
BIBLIOGRAPHY .....	15-64

### CHAPTER 16 DAMAGE TO MISSILES [REDACTED]

SECTION I BLAST DAMAGE TO TACTICAL MISSILE SYSTEMS .....	16-1
--	------

[REDACTED]

## TABLE OF CONTENTS (Continued)

CHAPTER 16 DAMAGE TO MISSILES [REDACTED] (Continued)	<i>Page</i>
SERGEANT WEAPON SYSTEM .....	16-3
16-1 Description of the SERGEANT Weapon System .....	16-3
16-2 Vulnerability Levels of the SERGEANT Missile System .....	16-7
16-3 Reliability of SERGEANT Vulnerability Estimates .....	16-10
LANCE WEAPON SYSTEM .....	16-12
16-4 Description of the LANCE Weapon System .....	16-12
16-5 Vulnerability Levels for the LANCE Missile System .....	16-12
16-6 Reliability of LANCE Vulnerability Estimates .....	16-17
HAWK WEAPON SYSTEM .....	16-19
16-7 Description of the HAWK Weapon System .....	16-19
16-8 Vulnerability Levels for the HAWK Missile System .....	16-23
16-9 Reliability of HAWK Vulnerability Estimates .....	16-24
SAMPLE PROBLEM: AIR BLAST DAMAGE TO A TACTICAL MISSILE SYSTEM .....	16-26
16-10 Description of the HONEST JOHN System .....	16-26
16-11 Vulnerability Levels for HONEST JOHN Missile System .....	16-31
SECTION II BLAST AND THERMAL VULNERABILITY OF IN-FLIGHT STRATEGIC SYSTEMS .....	16-34
INTRODUCTION .....	16-34
16-12 Sources of Data .....	16-38
16-13 Limitations in Application of the Data .....	16-38
BLAST LOADING ON REENTRY (RV) SYSTEMS .....	16-39
16-14 Environment Scaling .....	16-39
16-15 General Intercept Loads and Load Duration .....	16-47
16-16 Intercept Load Duration .....	16-51
16-17 Fireball Traversal Time .....	16-51
16-18 Total Traversal Time .....	16-52
16-19 Exit Loads .....	16-57
16-20 Blast Data Generalization .....	16-57
16-21 Typical RV Aerodynamics .....	16-57
16-22 Initial Interaction of Vehicle Flow-Field and Blast Wave (Shock-Shock) ...	16-58
16-23 Damage Envelopes .....	16-58
RESULTS OF SOME RV BLAST AND THERMAL LOAD AND VULNERABILITY CALCULATIONS .....	16-66
16-24 Blast Loads on the RV .....	16-66
16-25 Thermal Radiation Loads on the RV .....	16-70

[REDACTED]

## TABLE OF CONTENTS (Continued)

### CHAPTER 16 DAMAGE TO MISSILES [REDACTED] (Continued)

	<i>Page</i>
16-26 Description of a Blast/Thermal Vulnerability Determination .....	16-75
16-27 Results of the RV Vulnerability Determination .....	16-77
16-28 Summary and Conclusions Concerning RV Vulnerability Calculations .....	16-81
<b>ANTIMISSILE (ABM) SYSTEMS .....</b>	<b>16-81</b>
16-29 Shell Breathing Response .....	16-86
16-30 Vehicle Bending Response .....	16-87
16-31 Thermal Radiation Effects .....	16-87
16-32 ABM Blast/Thermal Vulnerability Envelopes .....	16-90
16-33 Conclusions .....	16-91
<b>BLAST AND THERMAL LETHALITY .....</b>	<b>16-96</b>
16-34 Blast and Thermal Free Field Environments .....	16-96
16-35 ABM Blast Loads on Threat Vehicles (Point Mass) .....	16-96
16-36 Blast Loads on the RV Threat Vehicle .....	16-101
16-37 ABM Blast Kill Radii .....	16-106
16-38 Fireball Thermal Effects on Threat RV's .....	16-109
<b>BIBLIOGRAPHY .....</b>	<b>16-116</b>

### CHAPTER 17 RADIO FREQUENCY SIGNAL DEGRADATION RELEVANT TO COMMUNICATIONS AND RADAR SYSTEMS [REDACTED]

<b>INTRODUCTION .....</b>	<b>17-1</b>
<b>SECTION I DEGRADATION MECHANISMS .....</b>	<b>17-2</b>
<b>ATTENUATION .....</b>	<b>17-2</b>
17-1 Fireball Absorption .....	17-2
17-2 Absorption in the Region Around the Fireball .....	17-2
17-3 D-Region Absorption .....	17-4
17-4 Absorption of Noise .....	17-4
17-5 Attenuation by Scattering and Beam Spreading .....	17-4
17-6 Effects of Reflection .....	17-6
<b>INTERFERENCE .....</b>	<b>17-6</b>
17-7 Noise .....	17-6
17-8 Reflection, Refraction, and Scatter .....	17-6
<b>SIGNAL DISTORTION .....</b>	<b>17-6</b>
<b>SECTION II SYSTEM CHARACTERISTICS AND EFFECTS .....</b>	<b>17-7</b>
<b>VLF AND LF SYSTEMS .....</b>	<b>17-7</b>

[REDACTED]

## TABLE OF CONTENTS (Continued)

### CHAPTER 17 RADIO FREQUENCY SIGNAL DEGRADATION RELEVANT TO COMMUNICATIONS AND RADAR SYSTEMS [REDACTED] (Continued)

	<i>Page</i>
17-9 VLF and LF Propagation .....	17-7
17-10 Effects of Nuclear Bursts on VLF and LF Systems .....	17-7
17-11 Spread-Debris Environment .....	17-9
17-12 Effect of a [REDACTED] 6300-km Burst .....	17-9
17-13 Effect of Detonations Below About 300 km .....	17-13
<b>HF SYSTEMS</b> .....	<b>17-13</b>
17-14 HF Propagation .....	17-13
17-15 Effect of Nuclear Bursts on HF Systems .....	17-13
17-16 Effect of Surface or Near-Surface Bursts .....	17-16
17-17 Effect of a [REDACTED] 30-km Burst .....	17-16
17-18 Effects of a [REDACTED] 50-km Burst .....	17-17
17-19 Effect of Multiple Multimegaton 150-km Bursts .....	17-17
17-20 Effect of a 1-Mt, 250-km Burst .....	17-18
17-21 Effect of a [REDACTED] 1000-km Burst .....	17-19
<b>SATELLITE COMMUNICATION SYSTEMS</b> .....	<b>17-19</b>
17-22 Effects of Nuclear Bursts on Satellite Systems .....	17-19
17-23 Nuclear Effects on Two Typical Satellite Systems .....	17-20
<b>TROPOSCATTER COMMUNICATION SYSTEMS</b> .....	<b>17-22</b>
17-24 Effects of Nuclear Bursts on Troposcatter Systems .....	17-22
17-25 Nuclear Effects on Three Typical Troposcatter Systems .....	17-26
<b>IONOSCATTER COMMUNICATION SYSTEMS</b> .....	<b>17-26</b>
17-26 Effects of Nuclear Bursts on Ionoscatter Systems .....	17-27
17-27 Nuclear Effects on Typical Ionoscatter Systems .....	17-28
<b>RADAR SYSTEMS</b> .....	<b>17-30</b>
17-28 Ballistic Missile Defense Systems .....	17-32
17-29 Nuclear Effects on Area Defense Systems .....	17-32
17-30 Nuclear Effects on Hardsite Defense Systems .....	17-36
<b>BIBLIOGRAPHY</b> .....	<b>17-40</b>

### APPENDIX A SUPPLEMENTARY BLAST DATA [REDACTED]

<b>SECTION I MATHEMATICAL DESCRIPTION OF THE SHOCK FRONT</b> .....	<b>A-1</b>
A-1 The Rankine-Hugoniot Equations .....	A-1
A-2 Equation of State of an Ideal Gas .....	A-3
A-3 Shock Wave Equations for an Ideal Gas .....	A-3
A-4 Units, Constants, and Conversion Factors .....	A-5

[REDACTED]

## TABLE OF CONTENTS (Continued)

<b>APPENDIX A SUPPLEMENTARY BLAST DATA</b> [REDACTED] (Continued)		<i>Page</i>
A-5	Equation of State of Air .....	A-5
A-6	Equations for Strong Shock Waves in Air .....	A-5
<b>SECTION II</b>	<b>PHYSICAL DESCRIPTION OF SHOCK WAVE BEHAVIOR</b> .....	<b>A-8</b>
A-7	Step Function Shock Wave .....	A-8
A-8	Shock-Front Formation .....	A-9
A-9	Pressure-Momentum Interaction at a Shock Front .....	A-9
A-10	Normal Reflection at a Solid Barrier .....	A-10
A-11	Pressures on Simple Shapes .....	A-12
A-12	The Rankine-Hugoniot Equations (Alternate Analysis) .....	A-14
A-13	Dynamic Pressure .....	A-16
<b>APPENDIX B USEFUL RELATIONSHIPS</b> [REDACTED]		
B-1	General Equivalents .....	B-1
B-2	Constants .....	B-1
B-3	Standard Sea Level Atmosphere .....	B-1
B-4	Conversions .....	B-2
B-5	Fractional Power and Dimension Scaling .....	B-4
<b>APPENDIX C PROBABILITY CONSIDERATIONS</b> [REDACTED]		
C-1	Protective Design and Weapon Selection .....	C-1
<b>SECTION I</b>	<b>DAMAGE PROBABILITIES</b> .....	<b>C-2</b>
<b>DAMAGE CAUSED BY MOTION INPUT</b> .....		<b>C-2</b>
C-2	Description of Charts for Damage Caused by Motion Input .....	C-2
C-3	Instructions for Motion Input Analyses .....	C-3
C-4	Illustrative Examples for Motion Inputs .....	C-3
<b>DAMAGE CAUSED BY PRESSURE</b> .....		<b>C-7</b>
C-5	Description of Charts for Damage to Surface Structures Caused by Pressure Input .....	<b>C-7</b>
C-6	Description of Charts for Damage to Underground Structures Caused by Pressure Input .....	<b>C-8</b>
C-7	Instructions for Pressure Input Analyses .....	C-8
C-8	Illustrative Examples for Pressure Inputs .....	C-8
C-9	System Consideration .....	C-9
<b>SECTION II</b>	<b>DERIVATION OF EQUATIONS USED IN SECTION I</b> .....	<b>C-14</b>
C-10	Properties of Lognormal Variates .....	C-14
C-11	Probability of Failure or Survival .....	C-14



## TABLE OF CONTENTS (Continued)

	<i>Page</i>
APPENDIX D ABSTRACTS OF DNA HANDBOOKS .....	D-1
APPENDIX E GLOSSARY .....	E-1
APPENDIX F LIST OF SYMBOLS .....	F-1





[REDACTED]

## LIST OF ILLUSTRATIONS

### PART II

<i>Figure</i>	<i>Title</i>	<i>Page</i>
9-1	[REDACTED] Initial Conditions for Loading of a Rigid, Fixed Cube [REDACTED] .....	9-5
9-2	[REDACTED] Target Loading by Overpressure [REDACTED] .....	9-6
9-3	[REDACTED] Net Blast Loading on Representative Structures [REDACTED] .....	9-9
9-4	[REDACTED] Direct and Reflected Shock Waves from an Underwater Burst [REDACTED] .....	9-12
9-5	[REDACTED] Ignition Thresholds for Black $\alpha$ -Cellulose Exposed to a Rectangular Thermal Pulse [REDACTED] .....	9-20
9-6	[REDACTED] Ignition Thresholds for Black $\alpha$ -Cellulose Exposed to a Simulated Weapon Pulse [REDACTED] .....	9-21
9-7	[REDACTED] Dimensionless Temperature Profiles in Opaque and Diathermanous Semi-Infinite Solids Exposed to a Rectangular Thermal Pulse [REDACTED] .....	9-24
9-8	[REDACTED] Exposed Facing Temperature-Time Histories of Aluminum Honeycomb Facing, 0.016-in. Gray Painted Skin; Core 1/8-in., Cell Size 1/2-in. Thick. 21-24.2 cal/cm <sup>2</sup> , 3.8 Mt [REDACTED] .....	9-33
9-9	[REDACTED] Schematic Comparison of Ideal Cosine Law with Function Including Scattering, Reflection, and Refraction [REDACTED] .....	9-35
9-10	[REDACTED] Thin Plate, Thick Plate, and Finite Plate Regions for Exposure to Nuclear Weapons Thermal Radiation [REDACTED] .....	9-41
9-11	[REDACTED] Thermal Response of a Thin Plate to Nuclear Weapons Thermal Radiation Pulse [REDACTED] .....	9-45
9-12	[REDACTED] Coefficient of Linear Expansion as a Function of Temperature for Stainless Steels [REDACTED] .....	9-48
9-13	[REDACTED] Coefficient of Linear Expansion as a Function of Temperature for Titanium Alloys [REDACTED] .....	9-49
9-14	[REDACTED] Coefficient of Linear Expansion as a Function of Temperature for Heat Resistant Alloys [REDACTED] .....	9-50
9-15	[REDACTED] Coefficient of Linear Expansion as a Function of Temperature for Aluminum Alloys [REDACTED] .....	9-51
9-16	[REDACTED] Typical Stress-Strain Curves for Titanium 6Al-4V Alloy at Room and Elevated Temperatures [REDACTED] .....	9-52
9-17	[REDACTED] Typical Stress-Strain Curves for 2014-T6 Aluminum Alloy at Room and Elevated Temperatures [REDACTED] .....	9-53
9-18	[REDACTED] Typical Stress-Strain Curves for 301 Stainless Steel at Room and Elevated Temperatures [REDACTED] .....	9-54
9-19	[REDACTED] Types of Rapid Heating Tensile Tests [REDACTED] .....	9-55
9-20	[REDACTED] Types of Short Time Creep Tests [REDACTED] .....	9-56

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
9-21	[REDACTED] 2024-T3 Aluminum Alloy Ultimate Strength at Elevated Temperature [REDACTED]	9-57
9-22	[REDACTED] 2024-T81 Aluminum Alloy Ultimate Strength at Elevated Temperature [REDACTED]	9-58
9-23	[REDACTED] 2014-T6 Aluminum Alloy Yield Strength at Elevated Temperature [REDACTED]	9-59
9-24	[REDACTED] Ultimate Strength Test Results for 6Al-4V Titanium Alloy at Elevated Temperature [REDACTED]	9-61
9-25	[REDACTED] Ultimate Strength Test Results for Full Hard Stainless Steel at Elevated Temperature [REDACTED]	9-62
9-26	[REDACTED] Stress-Strain Approximation for 2014-T6 Aluminum Alloy [REDACTED]	9-64
9-27	[REDACTED] Photon Cross Sections in Beryllium [REDACTED]	9-85
9-28	[REDACTED] Photon Cross Sections in Aluminum [REDACTED]	9-86
9-29	[REDACTED] Photon Cross Sections in Iron [REDACTED]	9-87
9-30	[REDACTED] Photon Cross Sections in Copper [REDACTED]	9-88
9-31	[REDACTED] Photon Cross Sections in Tungsten [REDACTED]	9-89
9-32	[REDACTED] Photon Cross Sections in Uranium [REDACTED]	9-90
9-33	[REDACTED] Photon Cross Sections in Carbon Phenolic (CP), $\bar{Z} = 6.08$ [REDACTED]	9-91
9-34	[REDACTED] Photon Cross Sections in Tape Wound Silicon Phenolic (TWSP), $\bar{Z} = 9.01$ [REDACTED]	9-92
9-35	[REDACTED] Energy Deposited in Aluminum by Black Body Spectra [REDACTED]	9-94
9-36	[REDACTED] Energy Deposited in Copper by Black Body Spectra [REDACTED]	9-95
9-37	[REDACTED] Energy Deposited by Black Body X-ray Spectra in Carbon Phenolic (CP) [REDACTED]	9-96
9-38	[REDACTED] Energy Deposited by Black Body X-ray Spectra in Tape Wound Silica Phenolic (TWSP) [REDACTED]	9-97
9-39	[REDACTED] Aluminum Isoenergy Lines. Parameter is Energy in cal/gm [REDACTED]	9-99
9-40	[REDACTED] Aluminum Isoenergy Lines and Adiabats [REDACTED]	9-100
9-41	[REDACTED] Sequence of Spallation Following Radiation Deposition [REDACTED]	9-104
9-42	[REDACTED] Equation of State for Elastic-Plastic Material Description [REDACTED]	9-106
9-43	[REDACTED] Normalized Vapor Impulses Produced in Aluminum by Various Black Body X-ray Spectra [REDACTED]	9-109
9-44	[REDACTED] Normalized Vapor Impulses Produced in Copper by Various Black Body X-ray Spectra [REDACTED]	9-110
9-45	[REDACTED] Two-Dimensional Lattice Structure of Silicon [REDACTED]	9-123
9-46	[REDACTED] Illustration of a Semiconductor Junction [REDACTED]	9-124
9-47	[REDACTED] Relative Shapes of Diffusion Component of Primary Photocurrent [REDACTED]	9-126

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
9-48	[REDACTED] NPN Transistor Illustrating the Primary Photocurrent [REDACTED] .....	9-127
9-49	[REDACTED] Radiation Storage Time [REDACTED] .....	9-128
9-50	[REDACTED] Gamma Ray Exposure Rate as a Function of Pulse Width Switching Thresholds for a 3A60A SCR [REDACTED] .....	9-130
9-51	[REDACTED] Construction of Typical Junction, MOS, and Thin-Film Field-Effect Transistors [REDACTED] .....	9-131
9-52	[REDACTED] An Illustrative Diode Characteristic for Pre- and Post-irradiation by Neutrons [REDACTED] .....	9-133
9-53	[REDACTED] An Illustration of Rise Time and Storage Time [REDACTED] .....	9-134
9-54	[REDACTED] Fast Neutron Bombardment Effect on Voltage-Current Characteristic of a Germanium Tunnel Diode [REDACTED] .....	9-135
9-55	[REDACTED] Fast Neutron Bombardment Effect on Voltage-Current Characteristic of a Silicon Tunnel Diode [REDACTED] .....	9-136
9-56	[REDACTED] Current Gain Degradation Characteristics for Some Common Transistor Types [REDACTED] .....	9-138
9-57	[REDACTED] Steps in the Fabrication of an NPN Silicon Planar Transistor [REDACTED] .....	9-142
9-58	[REDACTED] Transistor Cross Section and Package [REDACTED] .....	9-143
9-59	[REDACTED] Ball Stitch and Ultrasonic Bonding [REDACTED] .....	9-145
9-60	[REDACTED] Semiconductor Failure Modes [REDACTED] .....	9-146
9-61	[REDACTED] Circuit Response as a Function of Radiation-Pulse Width [REDACTED] .....	9-156
9-62	[REDACTED] Circuit in Which Burnout Could Occur [REDACTED] .....	9-157
9-63	[REDACTED] Load-Terminal I-V Characteristic ("On" Segment) of RD 308 in Neutron Environment [REDACTED] .....	9-165
9-64	[REDACTED] MC1525 Typical Transfer Characteristics [REDACTED] .....	9-166
9-65	[REDACTED] Electric Induction in a Copper Wire [REDACTED] .....	9-170
9-66	[REDACTED] Magnetic Induction in a Simple Loop [REDACTED] .....	9-171
9-67	[REDACTED] Resistive Coupling as a Result of Currents in the Ground [REDACTED] .....	9-171
9-68	[REDACTED] Reflected and Refracted Waves at the Air-Ground Interface [REDACTED] .....	9-172
9-69	[REDACTED] Energy Required to Damage Various Classes of Equipment [REDACTED] .....	9-177
10-1	[REDACTED] Fifty Percent Casualties for the Indicated Blast Effects for Prone Personnel Exposed in the Open or in a Forest to a 1 kt Burst [REDACTED] .....	10-8
10-2	[REDACTED] One Percent Casualties for the Indicated Blast Effects for Prone Personnel Exposed in the Open or in a Forest to a 1 kt Burst [REDACTED] .....	10-9
10-3	[REDACTED] Radiant Exposure Required to Produce Skin Burns for Different Skin Pigmentation [REDACTED] .....	10-13
10-4	[REDACTED] Skin Burn Probabilities for an Average Population Taking No Evasive Action [REDACTED] .....	10-14

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
10-5	Distance Thresholds for Second Degree Burns for Various Evasion Times	10-16
10-6	Safe Separation Distances, for an Observer on the Ground, from Bursts at 10 kft and 50 kft During the Day	10-18
10-7	Safe Separation Distance, for an Observer at 50 kft, from Bursts at 10 kft and 50 kft During the Day	10-19
10-8	Safe Separation Distance, for an Observer on the Ground, from Bursts at 10 kft and 50 kft, During the Night	10-20
10-9	Safe Separation Distance, for an Observer at 50 kft, from Bursts at 10 kft and 50 kft, During the Night	10-21
10-10	Safe Separation Distance, for an Observer on the Ground, from Low Yield Weapons Exploded at 1,000 ft Height of Burst	10-22
10-11	Personnel Effectiveness After Exposure to 1,400 rads	10-26
10-12	Personnel Effectiveness After Exposure to 2,800 rads	10-27
10-13	Personnel Effectiveness After Exposure to 7,000 rads	10-28
10-14	Personnel Effectiveness After Exposure to 13,000 rads	10-29
10-15	Personnel Effectiveness After Exposure to 22,000 rads	10-30
10-16	Comparison of Effects from Low Altitude Bursts	10-34
11-1	Idealized Loading Functions	11-4
11-2	Isodamage Curves for Fifty Percent Probability of Severe Damage to Multistory Blast-Resistant Reinforced Concrete Buildings	11-16
11-3	Isodamage Curves for Fifty Percent Probability of Severe Damage to Multistory Reinforced Concrete Buildings with Concrete Walls, Small Window Area, Three to Eight Stories	11-17
11-4	Isodamage Curves for Fifty Percent Probability of Severe Damage to Multistory Wall Bearing Buildings, Brick Apartment House Type, up to Three Stories	11-18
11-5	Isodamage Curves for Fifty Percent Probability of Severe Damage to Multistory Wall Bearing Building, Monumental Type, up to Four Stories	11-19
11-6	Isodamage Curves for Fifty Percent Probability of Severe Damage to Wood Frame Buildings, House Type, One or Two Stories	11-20
11-7	Isodamage Curves for Fifty Percent Probability of Severe Damage to Light Steel Frame Industrial Buildings, Single Story, Frangible Walls, up to 5 Ton Crane Capacity	11-21
11-8	Isodamage Curves for Fifty Percent Probability of Severe Damage to Heavy Steel Frame Industrial Buildings, Single Story, Frangible Walls, 25 to 50 Ton Crane Capacity	11-22

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
11-9	Isodamage Curves for Fifty Percent Probability of Severe Damage to Heavy Steel Frame Industrial Buildings, Single Story, Frangible Walls, 60 to 100 Ton Crane Capacity	11-23
11-10	Isodamage Curves for Fifty Percent Probability of Severe Damage to Multistory Steel Frame Office Type Buildings, 3- to 10-Stories, Frangible Walls, Earthquake Resistant Construction	11-24
11-11	Isodamage Curves for Fifty Percent Probability of Severe Damage to Multistory Steel Frame Office Type Buildings, 3- to 10-Stories, Frangible Walls, Non-Earthquake Resistant Construction	11-25
11-12	Isodamage Curves for Fifty Percent Probability of Severe Damage to Multistory Reinforced Concrete Frame Office Type Buildings, 3- to 10-Stories, Frangible Walls, Earthquake Resistant Construction	11-26
11-13	Isodamage Curves for Fifty Percent Probability of Severe Damage to Multistory Reinforced Concrete Frame Office Type Buildings, 3- to 10-Stories, Frangible Walls, Non-Earthquake Resistant Construction	11-27
11-14	Isodamage Curves for Fifty Percent Probability of Severe Damage to Four-Lane Highway Truss Bridges and Double Track Ballast Floor Railroad Truss Bridges, Span 200 ft to 400 ft	11-28
11-15	Isodamage Curves for Fifty Percent Probability of Severe Damage to Two-Lane Highway Truss Bridges, Spans 200 ft to 400 ft; Single Track Ballast Floors and Double Track Open Floor Railroad Truss Bridges, Spans 200 ft to 400 ft; and Single Track Open Floor Railroad Truss Bridges, Span 400 ft	11-29
11-16	Isodamage Curves for Fifty Percent Probability of Severe Damage to Single Track Open Floor Railroad Truss Bridges, Span 200 ft	11-30
11-17	Isodamage Curves for Fifty Percent Probability of Severe Damage to Four-Lane Through Highway Girder Bridges, Spans 75 ft	11-31
11-18	Isodamage Curves for Fifty Percent Probability of Severe Damage to Two-Lane Deck, Two-Lane Through, and Four-Lane Deck Highway Bridges, Spans 75 ft; Double Track Deck, Open or Ballast Floor Railroad Girder Bridges, Span 75 ft; Single or Double Track Through, Ballast Floor Railroad Girder Bridges, Spans 75 ft	11-32
11-19	Isodamage Curves for Fifty Percent Probability of Severe Damage to Single Track Deck, Open or Ballast Floor, and Single or Double Track Through, Open Floor Railroad Girder Bridges, Spans 75 ft	11-33
11-20	Isodamage Curves for Fifty Percent Probability of Severe Damage to Two-Lane Through and Four-Lane Deck or Through Highway Girder	

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
	Bridges, Spans 200 ft; Double Track Deck or Through, Ballast Floor	
11-21	Railroad Girder Bridges, Spans 200 ft [REDACTED] Isodamage Curves for Fifty Percent Probability of Severe Damage to Two-Lane Deck Highway Girder Bridges, Spans 200 ft; Single Track Deck or Through, Ballast Floor, and Double Track Deck or Through, Open Floor Railroad Girder Bridges, Spans 200 ft [REDACTED]	11-34
11-22	[REDACTED] Isodamage Curves for Fifty Percent Probability of Severe Damage to Single Track Deck or Through, Open Floor, Railroad Girder Bridges, Spans 200 ft [REDACTED]	11-35
11-23	[REDACTED] Isodamage Curves for Fifty Percent Probability of Severe Damage to Floating Bridges, U.S. Army Standard M-2 and M-4, Random Orientation [REDACTED]	11-36
11-24	[REDACTED] Damage-Distance Reduction for Surface Structures from 1 kt Bursts in Soil [REDACTED]	11-37
11-25	[REDACTED] Depth of Cover Classification for Arches [REDACTED]	11-39
11-26	[REDACTED] Buried Arches, Average Depth of Earth Cover [REDACTED]	11-42
11-27	[REDACTED] Average Depth of Earth Cover for Buried Domes [REDACTED]	11-43
11-28	[REDACTED] Configuration of Mounded Arches [REDACTED]	11-44
11-29	[REDACTED] Correction for Attenuation with Depth [REDACTED]	11-45
11-30	[REDACTED] Damage Pressure Level [REDACTED]	11-71
11-31	[REDACTED] Correction for Arching [REDACTED]	11-72
11-32	[REDACTED] Definition of Effective Pulse Duration [REDACTED]	11-73
11-33	[REDACTED] Approximate Values of $J$ and $r$ for Common Shapes [REDACTED]	11-74
11-34a	[REDACTED] Conditions for Moderate Damage by Impulsive Loading [REDACTED]	11-77
11-34b	[REDACTED] Conditions for Heavy Damage by Impulsive Loading [REDACTED]	11-78
11-35	[REDACTED] Resistance of Deeply Buried Horizontal Reinforced Concrete Arches [REDACTED]	11-79
11-35a	[REDACTED] Arch Radius Versus Rise-Span Ratio [REDACTED]	11-80
11-35b	[REDACTED] Correction Factor for Material Properties for Deeply Buried Horizontal Reinforced Concrete Arches [REDACTED]	11-81
11-36	[REDACTED] Resistance of Deeply Buried Horizontal Steel Arches [REDACTED]	11-82
11-37	[REDACTED] Resistance of Deeply Buried Reinforced Concrete Domes [REDACTED]	11-83
11-37a	[REDACTED] Dome Radius Versus Rise-Span Ratio [REDACTED]	11-84
11-37b	[REDACTED] Correction Factor for Material Properties for Deeply Buried Reinforced Concrete Domes [REDACTED]	11-85
11-38	[REDACTED] Resistance of Horizontal One-Way Slabs [REDACTED]	11-86
11-39	[REDACTED] Resistance of Horizontal Square Two-Way Slabs - Restrained Edges [REDACTED]	11-87

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
11-40	Resistance of Horizontal Square Two-Way Slabs - Two Adjacent Edges Supported	11-89
11-41	Aspect Ratio Correction Factor for Strength of Two-Way Slabs	11-90
11-42	Resistance of Horizontal Square Flat Slabs	11-91
11-42a	Aspect Ratio Correction Factor for Strength of Rectangular Flat Slabs	11-92
11-43	Radial Dead Load Soil Pressure on Vertical Cylinder	11-93
11-44	Interaction Diagram for Reinforced Concrete Beam - Columns	11-94
11-45	Basic Chart for Vulnerability of Tunnels in Rock	11-96
11-46	Vulnerability Criteria - Class A Equipment	11-101
11-47	Vulnerability Criteria for Personnel	11-102
11-48	Vulnerability Plot for Seismic Velocity ( $c_p$ ) of 1500 fps - Vertical Motion	11-105
11-49	Vulnerability Plot for Seismic Velocity ( $c_p$ ) of 5000 fps - Vertical Motion	11-106
11-50	Vulnerability Plot for Seismic Velocity ( $c_p$ ) of 15,000 fps - Vertical Motion	11-107
11-51	Shock Response Spectra and Vulnerability Calculation	11-108
11-52	Blast Resistance of Unprotected Floating and Conical-roof Tanks for 20 kt	11-114
11-53	Blast Resistance of Protected Floating and Conical-roof Tanks for 20 kt	11-115
11-54	Blast Resistance of Unprotected Floating and Conical-roof Tanks for 500 kt	11-116
11-55	Blast Resistance of Protected Floating and Conical-roof Tanks for 500 kt	11-117
11-57	Command Posts and Personnel Shelters (reference Table 11-13) - Damage by 1 kt as Function of Height of Burst and Ground Distance	11-125
11-56	Machine-gun Emplacements - Damage by 1 kt as a Function of Height of Burst and Ground Distance (reference Table 11-13)	11-124
11-58	Damage Levels to Foxholes and Trenches in Selected Soils Versus Overpressure Impulse	11-126
11-59	Ignition Thresholds for Newspaper	11-133
11-60	Graphical Summary of San Jose Study	11-135
11-61	Graphical Summary of New Orleans Study	11-137
11-62	Graphical Analysis of the Thermal and Blast Effects of Two Nuclear Bursts	11-142

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
12-1	[REDACTED]	12-5
12-2	[REDACTED]	12-7
NAVY (6X1) 12-3	[REDACTED]	12-14
12-4	[REDACTED]	12-15
12-5	[REDACTED]	12-16
12-6	[REDACTED]	12-22
12-7	[REDACTED]	12-23
12-8	[REDACTED]	12-24
12-9	[REDACTED]	12-25
12-10	[REDACTED]	12-26
12-11	[REDACTED]	12-27
12-12	[REDACTED]	12-28
12-13	[REDACTED]	12-29
13-1	Example Airplane (American)	13-16
13-2	Example Helicopter	13-17
13-3	Subsonic Wing Lift Curve Slope	13-18
13-4a	Wing Supersonic Normal Force Curve Slope	13-19
13-4b	Wing Supersonic Normal Force Curve Slope	13-20
13-4c	Wing Supersonic Normal Force Curve Slope	13-21
13-5	Ratio of the Aspect Ratio of the Vertical Tail in the Presence of the Body to That of the Isolated Vertical Tail at Subsonic Speeds	13-25
13-6	Empirical Factor for Estimating $C_{L\alpha}$ for Vertical Tails	13-26
13-7	Dynamic Factor vs Weapon Yield	13-34



[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

Figure	Title	Page
13-8a	$w/c \times \Delta L/L$ as a Function of Scaled Range ( $N > 0$ )	13-35
13-8b	$w/c \times \Delta L/L$ as a Function of Scaled Range ( $N < 0$ )	13-36
13-9	Standard Shapes for Gust Envelopes at Intercept Time	13-37
13-10	Lethal Ratio vs Weapon Yield	13-38
13-11	Dynamic Factor vs Weapon Yield	13-45
13-12a	$\eta \times \Delta L/L$ as a Function of Scaled Range ( $N > 0$ )	13-46
13-12b	$\eta \times \Delta L/L$ as a Function of Scaled Range ( $N < 0$ )	13-47
13-13	Standard Shapes for Gust Envelopes at Intercept Time	13-48
13-14	Lethal Ratio vs Weapon Yield	13-49
13-15	Peak Overpressure from a 1 kt Free Air Burst in a Standard Sea Level Atmosphere	13-54
13-16	The Range Parameter $\overline{HR}_i$ as a Function of Sea Level Overpressure	13-55
13-17a	$\overline{BH}_i$ as a Function of $\overline{HR}_i$ , Short Ranges	13-56
13-17b	$\overline{BH}_i$ as a Function of $\overline{HR}_i$ , Long Ranges	13-57
13-18	Overpressure Envelope for Parked Aircraft	13-58
13-19	Equilibrium Temperature as a Function of Mach Number	13-65
13-20	Thermal Partition as a Function of Yield and Altitude	13-66
13-21	Geometry of Burst and Intercept Reference Frames	13-76
13-22	Time of Arrival of the Shock Front from a 1 kt Free Air Burst in a Standard Sea Level Atmosphere	13-77
13-23	Intercept-Time Envelope (Front View)	13-78
13-24a	Intercept-Time Envelope (Side View)	13-79
13-24b	Slice Through Intercept-Time Volume at $Y_i = 2,000$ Feet	13-79
13-24c	Slice Through Intercept-Time Volume at $Y_i = 4,000$ Feet	13-80
13-24d	Slice Through Intercept-Time Volume at $Y_i = 6,000$ Feet	13-80
13-24e	Slice Through Intercept-Time Volume at $Y_i = 8,000$ Feet	13-81
13-24f	Slice Through Intercept-Time Volume at $Y_i = 10,000$ Feet	13-81
13-25a	Burst-Time Envelope (Side View)	13-82
13-25b	Slice Through Burst-Time Volume at $Y_B = 2,000$ Feet	13-82
13-25c	Slice Through Burst-Time Volume at $Y_B = 4,000$ Feet	13-83
13-25d	Slice Through Burst-Time Volume at $Y_B = 6,000$ Feet	13-83
13-25e	Slice Through Burst-Time Volume at $Y_B = 8,000$ Feet	13-84
13-25f	Slice Through Burst-Time Volume at $Y_B = 10,000$ Feet	13-84
13-26a	Burst-Time Envelope (Front View)	13-85
13-26b	Burst-Time Envelope (Top View)	13-85
14-1	Surface Burst Ground Range as a Function of Yield for Constant Total Impulse of 0.50 psi-sec	14-3

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
14-2	Target Response Modes	14-5
14-3	Illustration of the Damage vs Distance Curve	14-7
14-4	Damage to 1/4 Ton and 2-1/2 Ton Trucks, Side-On Orientation, as a Function of Ground Distance from a 1 kt Surface Burst	14-8
14-5	Damage to U.S. 57-mm and U.K. 25-Pounder, Side-On Orientation, as a Function of Ground Distance from a 1 kt Surface Burst	14-9
14-6	Damage to World War II and M38 1/4-Ton Trucks as a Function of Distance from a 1 kt Surface Burst	14-10
14-7	Illustration of the Effect of Target Orientation: Damage to World War II 1/4-Ton Trucks Oriented Side-On and End-On as a Function of Distance from a 1 kt Surface Burst	14-11
14-8	The Effect of Shielding	14-12
14-9	Effect of Weapon Yield on World War II 1/4-Ton Trucks Exposed Side-On in Shielded and Unshielded Conditions to Surface Explosions	14-13
14-10	Effect of Surface Condition on Damage Category Illustrated by Damage to 1/4-Ton Trucks Oriented Side-On to the Blast Wave from a 1 kt Surface Burst on Two Surfaces	14-15
14-11	Effect of Vehicle Status on the Distance for a Specified Damage Level from a 1 kt Surface Burst to U.S. 1/4-Ton Trucks (Brakes On, In Gear) and U.K. 1/4-Ton Trucks (Brakes Off, Out-of-Gear) Exposed in an End-On Orientation	14-16
14-12	Peak Dynamic Pressure as a Function of Peak Overpressure	14-26
14-13	Damage to <i>Wheeled Vehicles</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{0.4}$	14-37
14-14	Damage to <i>Artillery</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{0.4}$	14-38
14-15	Damage to <i>Tracked Vehicles (Except Tanks) and Engineer Heavy Equipment</i> as a Function of Height of Burst (HOB) and Ground Distance	

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
	(GD) for a 1 kt Explosion Over Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{0.4}$ [REDACTED] .....	14-39
14-16	[REDACTED] Damage to <i>Tanks (Light and Heavy)</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{0.4}$ [REDACTED] .....	14-40
14-17	[REDACTED] Damage to <i>Small Arms</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{0.4}$ [REDACTED] .....	14-41
14-18	[REDACTED] Damage to <i>Generators</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{0.4}$ [REDACTED] .....	14-42
14-19	[REDACTED] Damage to <i>Locomotives</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over both Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{0.4}$ [REDACTED] .....	14-43
14-20	[REDACTED] Damage to <i>Box Cars</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over both Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{0.4}$ [REDACTED] .....	14-44
14-21	[REDACTED] Damage to <i>Supply Dumps</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over both Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is the indicated probability that the dump will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{0.4}$ [REDACTED] .....	14-45
14-22	[REDACTED] Damage to <i>Telephone Poles</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over both Nonideal and	

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
	Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{1/3}$ [REDACTED]	14-46
14-23	[REDACTED] Damage to <i>Water Storage Equipment</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{1/3}$ [REDACTED]	14-47
14-24	[REDACTED] Damage to <i>Shielded Wheeled Vehicles</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over both Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{1/3}$ [REDACTED]	14-48
14-25	[REDACTED] Damage to <i>Shielded Engineer Heavy Equipment</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over both Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{1/3}$ [REDACTED]	14-49
14-26	[REDACTED] Damage to <i>Signal, Electronic Fire Control Equipment, Antennas and Rigid Radomes</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is the indicated probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ ; GD scales as $W^{0.4}$ except for Radomes. For Radomes use $W^{1/3}$ [REDACTED]	14-50
14-27	[REDACTED] Damage to <i>Wire Entanglements</i> as a Function of Height of Burst (HOB) and Ground Distance (GD) for a 1 kt Explosion Over Nonideal and Near-Ideal Surfaces. The curves show HOB and GD at which there is a 50 percent probability that the item of equipment will experience at least the level of damage shown. NOTE: HOB scales as $W^{1/3}$ for yields < 1 kt, $W^{0.4}$ for yields > 1 kt [REDACTED]	14-51
15-1	[REDACTED] Light Damage to Various Broadleaf Forest Types [REDACTED]	15-7
15-2	[REDACTED] Moderate Damage to a Type I Forest [REDACTED]	15-8
15-3	[REDACTED] Severe Damage to a Type I Forest [REDACTED]	15-9
15-4	[REDACTED] Total Damage to a Type I Forest [REDACTED]	15-10
15-5	[REDACTED] Moderate Damage to a Type II Forest [REDACTED]	15-11

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
15-6	Severe Damage to a Type II Forest	15-12
15-7	Total Damage to a Type II Forest	15-13
15-8	Moderate Damage to a Type III Forest	15-14
15-9	Severe Damage to a Type III Forest	15-15
15-10	Total Damage to a Type III Forest	15-16
15-11	Moderate Damage to a Type IVa-1(f) Forest	15-17
15-12	Severe Damage to a Type IVa-1(f) Forest	15-18
15-13	Total Damage to a Type IVa-1(f) Forest	15-19
15-14	Moderate Damage to a Type IVa-1(d) Forest	15-20
15-15	Severe Damage to a Type IVa-1(d) Forest	15-21
15-16	Total Damage to a Type IVa-1(d) Forest	15-22
15-17	Moderate Damage to a Type IVa-2(f) Forest	15-23
15-18	Severe Damage to a Type IVa-2(f) Forest	15-24
15-19	Total Damage to a Type IVa-2(f) Forest	15-25
15-20	Moderate Damage to a Type IVa-2(d) Forest	15-26
15-21	Severe Damage to a Type IVa-2(d) Forest	15-27
15-22	Total Damage to a Type IVa-2(d) Forest	15-28
15-23	Moderate Damage to a Type IVb(f) Forest	15-29
15-24	Severe Damage to a Type IVb(f) Forest	15-30
15-25	Total Damage to a Type IVb(f) Forest	15-31
15-26	Moderate Damage to a Type IVb(d) Forest	15-32
15-27	Severe Damage to a Type IVb(d) Forest	15-33
15-28	Total Damage to a Type IVb(d) Forest	15-34
15-29	Moderate Damage to a Type IVc(f) Forest	15-35
15-30	Total Damage to a Type IVc(f) Forest	15-36
15-31	Moderate Damage to a Type IVc(d) Forest	15-37
15-32	Total Damage to a Type IVc(d) Forest	15-38
15-33	Moderate Damage to a Type IVd Forest	15-39
15-34	Total Damage to a Type IVd Forest	15-40
15-35	Stem-ft per Acre Comparison Between a Rain Forest and a Coniferous Forest	15-43
15-36	Average Diameter of Stems Down, Comparison Between a Rain Forest and a Coniferous Forest, 1 kt	15-44
15-37	Debris Characteristics Preventing Radial Movement of Vehicles	15-45
15-38	Debris Characteristics Preventing Circumferential Movement of Vehicles	15-46
15-39	Minimum Radiant Exposures of Wildland Kindling Fuels by a 1 Kiloton Explosion	15-55

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
15-40	Probability of Exposure of the Forest Floor ("Standard Northern European Forest") as a Function of Elevation Angle: Examples of a Point Source and a Spherical Source Subtending an Angle of 10 Degrees	15-57
15-41	Probability of Exposure of Forest Floor for Different Levels of Tree Density	15-59
16-1	Missile Configurations, SERGEANT, LANCE, and HAWK	16-2
16-2	SERGEANT System, Semitrailer Transporter with Missile Section Containers	16-4
16-3	SERGEANT System, Launching Station with Missile in Firing Position	16-5
16-4	SERGEANT System, Launching Station Firing Set	16-6
16-5	SERGEANT System, Organizational Maintenance Test Station (OMTS)	16-8
16-6	SERGEANT, Major Item Blast Vulnerability	16-11
16-7	LANCE System, Primary Units of the Missile System	16-13
16-8	LANCE System, Prefire Tester and Fire Pack	16-14
16-9	LANCE, Major Item Blast Vulnerability	16-18
16-10	HAWK System, Basic Assault Firing Unit	16-20
16-11	HAWK System, Auxiliary Components	16-21
16-12	HAWK, Major Item Blast Vulnerability	16-25
16-13	HONEST JOHN, Major Components of Rocket	16-26
16-14	HONEST JOHN, Truck-Mounted Rocket Launcher in Traveling Position	16-27
16-15	HONEST JOHN Rocket Launcher in Firing Position	16-28
16-16	HONEST JOHN, Auxiliary Equipment	16-29
16-17	HONEST JOHN, Major Item Blast Vulnerability	16-33
16-18	ABM and RV Configuration Comparison	16-35
16-19	ABM and RV Operating Envelope Comparison	16-35
16-20	Response Regimes for Interceptor Missile	16-36
16-21	Nuclear Encounter and Event Sequence for RV and ABM	16-37
16-22	HARTS Configuration	16-40
16-23	Blast Intercept Conditions Nomenclature	16-41
16-24	Scaled Blast Wave Radius for Constant Hardness Level for Configuration A, 5,500 nm Range	16-44
16-25	Scaled Time of Blast Intercept for Constant Hardness Level for Configuration A, 5,500 nm Range	16-45

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
16-26	[REDACTED] Variation of Hardness Level with Altitude and Slant Range for [REDACTED] Configuration A [REDACTED]	16-46
16-27	[REDACTED] Normal Reentry Trajectory; Initial Altitude = 400,000 ft, Initial Velocity ( $V_i$ ) = 23,900 ft/sec, Initial Flight-Path Angle = 20°, Ballistic Coefficient $\beta = W/C_d A$ lb/ft <sup>2</sup> [REDACTED]	16-48
16-28	[REDACTED] Normal Reentry Trajectory; Initial Altitude = 400,000 ft, Initial Velocity ( $V_i$ ) = 24,000 ft/sec, Initial Flight-Path Angle = 30°, Ballistic Coefficient $\beta = W/C_d A$ lb/ft <sup>2</sup> [REDACTED]	16-49
16-29	[REDACTED] Normal Reentry Trajectory; Initial Altitude = 400,000 ft, Initial Velocity ( $V_i$ ) = 24,000 ft/sec, Initial Flight-Path Angle = 30°, Ballistic Coefficient $\beta = W/C_d A$ lb/ft <sup>2</sup> [REDACTED]	16-50
16-30	[REDACTED] Scaled Intercept Load Duration Time, 500 g Hardness, Configuration A [REDACTED]	16-54
16-31	[REDACTED] Scaled Fireball Traversal Time 500 g Hardness, Configuration A [REDACTED]	16-55
16-32	[REDACTED] Scaled Total Blast Traversal Time, 500 g Hardness, Configuration A [REDACTED]	16-56
16-33	[REDACTED] Flow Pattern Around an Axisymmetric Blunt-Nosed Body [REDACTED]	16-57
16-34	[REDACTED] Steady State Flow Field Surface Pressures, Sphere-Cone-Flare Body [REDACTED]	16-59
16-35	[REDACTED] Steady State Flow Field Surface Pressures, Cone Sphere Body [REDACTED]	16-60
16-36	[REDACTED] Maximum Overpressure and Overpressure Duration for Typical Shock-Shock Interactions [REDACTED]	16-61
16-37	[REDACTED] Determination of Locus of Escape [REDACTED]	16-63
16-38	[REDACTED] Qualitative Iso-g Contours [REDACTED]	16-64
16-39	[REDACTED] In-Flight Intercept [REDACTED]	16-65
16-40	[REDACTED]	16-67
16-41	[REDACTED]	16-68
16-42	[REDACTED]	16-69
16-43	[REDACTED]	16-71

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

Figure	Title	Page
16-44	[REDACTED] Thermal Radiation Heat Load on the Cone as a Function of Initial Slant Range for Several Burst Altitudes [REDACTED]	16-72
16-45	[REDACTED] Thermal Radiation Heat Load on the Cone as a Function of Initial Slant Range for Several Burst Yields [REDACTED]	16-73
16-46	[REDACTED] Thermal Radiation Heat Load on the Cone as a Function of Initial Slant Range for Several Trajectories [REDACTED]	16-74
16-47	[REDACTED]	16-78
16-48	[REDACTED]	16-79
16-49	[REDACTED] Cone Bulk Temperature After Fly Through as a Function of Initial Slant Range from Burst (Head on Intercept) [REDACTED]	16-80
16-50	[REDACTED] Minimum Initial Slant Range for Structural/Thermal Damage at 40 kft Burst Altitude, $V_E/\gamma_E = 17,000$ ft/sec/ $-35^\circ$ [REDACTED]	16-82
16-51	[REDACTED] Inboard Profile of AIRS I Vehicle [REDACTED]	16-84
16-52	[REDACTED] Inboard Profile of AIRS II Vehicle [REDACTED]	16-85
16-53	[REDACTED] Illustration of Ablation Phenomena [REDACTED]	16-89
16-54	[REDACTED]	16-92
16-55	[REDACTED]	16-93
16-56	[REDACTED]	16-94
16-57	[REDACTED]	16-95
16-58	[REDACTED] Computed Temperature Profile, $t = 4.64$ msec, 30 kilofeet Altitude [REDACTED]	16-97
16-59	[REDACTED] Computed Density Profile, $t = 4.64$ msec, 30 kilofeet Altitude [REDACTED]	16-98
16-60	[REDACTED] Computed Static Pressure Profile, $t = 4.64$ msec, 30 kilofeet Altitude [REDACTED]	16-99
16-61	[REDACTED] Computed Particle Velocity Profile, $t = 4.64$ msec, 30 kilofeet Altitude [REDACTED]	16-100
16-62	[REDACTED] RV Target A, Static Overpressure as a Function of Time, 30° Intercept [REDACTED]	16-102
16-63	[REDACTED] RV Target A, Dynamic Pressure as a Function of Time, 30° Intercept [REDACTED]	16-103



[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
16-64	[REDACTED] RV Target A, Static Overpressure Impulse as a Function of Time, 30° Intercept	16-104
16-65	[REDACTED] RV Target A, Dynamic Pressure Impulse as a Function of Time, 30° Intercept	16-105
16-66	[REDACTED] Pressure-Impulse Damage Levels, RV Target A Configuration Aft Bay	16-108
16-67	[REDACTED] SPRINT Blast Loads, RV Target A, 30 Knots Altitude, Aft Bay	16-110
16-68	[REDACTED] Ablation Rate and Mass Ablated as a Function of Time for Target A Threat RV	16-111
16-69	[REDACTED] Mass Ablated as a Function of Burst Time Standoff Distance for Target A Threat RV	16-112
16-70	[REDACTED] Typical Traverse-Mass Erosion Rate History	16-114
16-71	[REDACTED] Typical Traverse-TML History	16-115
17-1	[REDACTED] Approximate Locations of Ionization Causing Absorption	17-3
17-2	[REDACTED] Attenuation Related to Normal Loss Due to Spread-Debris Environment, 4000-km Path Length	17-10
17-3	[REDACTED] Attenuation Relative to Normal Loss of Nighttime Impulse Disturbance, Path Length = 4000 km	17-11
17-4	[REDACTED] Phase Variation Relative to Normal for Nighttime Impulse Disturbance, Path Length = 4000 km	17-12
17-5	[REDACTED] Examples of Daytime HF Ray-Path Geometry	17-14
17-6	[REDACTED] Example of Signal-to-Noise Ratio and Absorption After a 30-km Burst	17-23
17-7	[REDACTED] Example of Signal-to-Noise Ratio and Noise Temperature After Multimegaton 150-km Bursts	17-24
17-8	[REDACTED] Illustration of Troposcatter Geometry	17-25
17-9	[REDACTED] Illustration of Ionoscatter Geometry	17-29
17-10	[REDACTED] Plan View of Radar and Target Geometry	17-34
17-11	[REDACTED] Signal-to-Noise Ratios and Elevation Errors for Radar Located at Target	17-35
17-12	[REDACTED] Signal-to-Noise Ratios and Elevation Errors for Offset Radar	17-37
17-13	[REDACTED] Solid Angle Obscured by 10-kt Intercept	17-38
A-1	[REDACTED] Change in Air Properties Across a Shock Front	A-2
A-2	[REDACTED] Equation of State Data for Air	A-6
A-3	[REDACTED] Idealized Shock Wave	A-8
A-4	[REDACTED] Parameters of a 10 psi Shock Wave	A-10

[REDACTED]

## LIST OF ILLUSTRATIONS (Continued)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
A-5	[REDACTED] Reflection of a 10 psi Shock Wave from a Solid Barrier [REDACTED] .....	A-11
A-6	[REDACTED] Reflection of a Shock Wave by a Small Object [REDACTED] .....	A-12
B-1	[REDACTED] Various Fractional Powers of Numbers [REDACTED] .....	B-6
B-2	[REDACTED] Dimension Scaling Nomogram [REDACTED] .....	B-7
B-3	[REDACTED] Height of Burst—Horizontal Distance—Slant Range Nomogram [REDACTED] .....	B-8
C-1	[REDACTED] Probability Distributions for Failure or for Survival as Function of Ratio of Median Input Motion $b_i$ to Median Vulnerability Level of Motion $b_v$ [REDACTED] .....	C-5
C-2	[REDACTED] Coefficient of Variation $\sigma/m$ as Function of $b_i/b_v$ Ratio for Specified Probability of Failure (or of $b_v/b_i$ for Specified Probability of Survival) [REDACTED] .....	C-6

## LIST OF TABLES

### PART II

<i>Table</i>	<i>Title</i>	<i>Page</i>
9-1	Thermal Properties of Materials	9-18
9-2	Approximate Radiant Exposures for Ignition of Fabrics	9-26
9-3	Approximate Radiant Exposures for Ignition of Various Materials	9-27
9-4	Minimum Structure Separation for Escape Route	9-31
9-5	Absorption Coefficients for Bare Metals	9-32
9-6	Average Absorption Coefficients for Laser Heated Coated Substrates	9-33
9-7	Representative Values of Absorption Coefficients for Metals with Various Coatings or Surface Treatments	9-34
9-8	Values of $h_{cv}$ Obtained from Various Functions in the Order in Which the Equations are Given Above	9-37
9-9	Allowable Uniform Static Load for Aluminum Plate at Three Temperatures	9-65
9-10	X-ray Cross Sections, Beryllium $Z = 4$ ( $\text{cm}^2/\text{gm}$ )	9-77
9-11	X-ray Cross Sections, Aluminum $Z = 13$ ( $\text{cm}^2/\text{gm}$ )	9-78
9-12	X-ray Cross Sections, Iron $Z = 26$ ( $\text{cm}^2/\text{gm}$ )	9-79
9-13	X-ray Cross Sections, Copper $Z = 29$ ( $\text{cm}^2/\text{gm}$ )	9-80
9-14	X-ray Cross Sections, Tungsten $Z = 74$ ( $\text{cm}^2/\text{gm}$ )	9-81
9-15	X-ray Cross Sections, Uranium $Z = 92$ ( $\text{cm}^2/\text{gm}$ )	9-83
9-16	X-ray Deposition and Shine Through in Aluminum for $10 \text{ cal}/\text{cm}^2$ of Incident X-rays	9-93
9-17	Enthalpy Change for Selected Metals	9-98
9-18	Fluence Required to Produce Various Enthalpy Changes at the Surface of Aluminum ( $\text{cal}/\text{cm}^2$ )	9-101
9-19	Enthalpy Changes $\epsilon$ (Mb)	9-102
9-20	Pressure Change, $P$ (Mb)	9-103
9-21	X-ray Energy Deposition and Shine Through for Reference RV Shell	9-117
9-22	Estimated Dose Transmission Factors (Interior Dose/Exterior Dose)	9-120
9-23	Representative Radiation-Failure Levels for Digital Junction-Isolated Semiconductor Integrated Circuits	9-163
9-24	Failure Thresholds for Typical Digital Microcircuits	9-167
9-25	Failure Thresholds for Typical Linear Microcircuits	9-168
9-26	Failure Thresholds for Typical MOS Digital Microcircuits	9-169
9-27	Minimum Observed Joule Energy to Cause Burnout	9-174
9-28	Minimum Joule Energy to Cause Permanent Degradation Indicated	9-175
9-29	Minimum Joule Energy to Cause Circuit Upset or Interference	9-176

[REDACTED]

## LIST OF TABLES (Continued)

<i>Table</i>	<i>Title</i>	<i>Page</i>
9-30	[REDACTED] Comparison of Guided Wave and Radiating Simulators [REDACTED]	9-181
10-1	[REDACTED] Estimated Casualty Production in Buildings for Three Degrees of Structural Damage [REDACTED]	10-6
10-2	[REDACTED] Response to Single Whole-Body Exposures [REDACTED]	10-24
11-1	[REDACTED] Damage to Types of Structures Primarily Affected by Blast Wave Overpressure During the Diffraction Phase [REDACTED]	11-5
11-2	[REDACTED] Damage to Types of Structures Primarily Affected by Dynamic Pressure During the Drag Phase [REDACTED]	11-6
11-3	[REDACTED] Building Parameter Values [REDACTED]	11-10
11-4	[REDACTED] Reference List of Isodamage Curves for Various Types of Bridges [REDACTED]	11-11
11-5	[REDACTED] Factors for Obtaining Distances Corresponding to 50 Percent Probability of Moderate Damage to the Indicated Structure Type [REDACTED]	11-13
11-6	[REDACTED] Ratio of Horizontal to Vertical Soil Pressures, $K_0$ [REDACTED]	11-56
11-7	[REDACTED] Equivalent Friction Angles for Nongranular Cohesive Soils [REDACTED]	11-57
11-8	[REDACTED] Typical Tunnel Design Concepts [REDACTED]	11-58
11-9	[REDACTED] Limits of Vulnerability in Terms of Overpressure for Surface Silos—1 Mt [REDACTED]	11-59
11-10	[REDACTED] Definition of $\gamma$ and $\delta$ for Figures 11-32 and 11-34 [REDACTED]	11-75
11-11	[REDACTED] Estimates of Frequency and Vulnerability of Typical Items of Equipment [REDACTED]	11-98
11-12	[REDACTED] Light Damage to POL Tanks [REDACTED]	11-112
11-13	[REDACTED] Damage Criteria for Field Fortifications [REDACTED]	11-119
11-14	[REDACTED] Unified Soil Classification [REDACTED]	11-120
12-1	[REDACTED]	12-3
NAVY (S)(U) 12-2	[REDACTED]	12-8
12-3	[REDACTED]	12-10
12-4	[REDACTED]	12-18
13-1	[REDACTED] Selected Data Based on U.S. Standard Atmosphere, 1962 English Units [REDACTED]	13-15
13-2	[REDACTED] Overpressure Criteria [REDACTED]	13-51
13-3	[REDACTED] Average Properties of Selected Engineering Materials [REDACTED]	13-63
13-4	[REDACTED] Average Values of Absorptivities, $\alpha$ [REDACTED]	13-64
14-1	[REDACTED] Definitions of Damage Categories [REDACTED]	14-18
14-2	[REDACTED] Wheeled Vehicle Subsystems [REDACTED]	14-18

[REDACTED]

## LIST OF TABLES (Continued)

<i>Table</i>	<i>Title</i>	<i>Page</i>
14-3	[REDACTED] Typical Subsystem Damage for Various Damage Categories	14-19
14-4	[REDACTED] List of Equipment and Corresponding Prediction Tables	14-22
14-5	[REDACTED] Equipment Sensitive to Total Impulse	14-23
14-6	[REDACTED] Equipment Sensitive to Overpressure	14-24
14-7	[REDACTED] Equipment Sensitive to Dynamic Pressure	14-25
14-8	[REDACTED] Untested Equipment	14-53
14-9	[REDACTED] Ambient Radiation Levels for "Sure Safe" and "Sure Kill" in Selected Ground Systems	14-66
14-10	[REDACTED] Ambient Radiation Levels for "Sure Safe" and "Sure Kill" for General Aircraft Subsystems	14-68
14-11	[REDACTED] Ambient Radiation Levels for "Sure Safe" and "Sure Kill" for Missile Systems	14-71
15-1	[REDACTED] Average Height of Trees, Diameter, Tree Density, and Length of Tree Stem	15-2
15-2	[REDACTED] Index of Isodamage Curves Showing Forest Stand Type and Applicable Figure Number for Indicated Degree of Damage	15-3
15-3	[REDACTED] Effects of a 1 kt Weapon Burst at a Height of 270 Feet Over a Rain Forest	15-41
15-4	[REDACTED] Effects of a 1 kt Surface Burst on a Coniferous Forest	15-42
15-5	[REDACTED] Comparison of Radial and Circumferential Movement Rates for Troops in a Rain Forest Blowdown Area, Scaled to a 1 kt Nuclear Explosion	15-48
15-6	[REDACTED] Comparison of Circumferential Movement Rates for Troops in a Coniferous Forest Blowdown Area, Scaled to a 1 kt Nuclear Explosion	15-48
15-7	[REDACTED] Influence of Forest Damage on the Movement of Troops and Vehicles	15-49
15-8	[REDACTED] Classes of Thin Wildland Kindling Fuels (Arranged in Order of Decreasing Flammability)	15-52
15-9	[REDACTED] "Standard Northern European Forest" Data	15-57
15-10	[REDACTED] Condition of Wildland Fuels During Fire Season	15-60
15-11	[REDACTED] Criteria of "No-Spread" of Fires	15-61
15-12	[REDACTED] Fire-Out Criteria	15-62
15-13	[REDACTED] Burning Durations by Fuel Type	15-63
16-1	[REDACTED] SERGEANT, Characteristics and Damage Levels for System Components	16-9
16-2	[REDACTED] Blast Vulnerability Summary, SERGEANT Missile System	16-10
16-3	[REDACTED] LANCE, Characteristics and Damage Levels for System Components	16-15
16-4	[REDACTED] Blast Vulnerability Summary, LANCE Missile System	16-19

[REDACTED]

## LIST OF TABLES (Continued)

<i>Table</i>	<i>Title</i>	<i>Page</i>
16-5	HAWK, Characteristics and Damage Levels for System Components	16-22
16-6	Blast Vulnerability Summary, HAWK Missile System	16-24
16-7	Missile System Components - HONEST JOHN	16-30
16-8	Summary - HONEST JOHN	16-31
16-9	Range of Basic Parameters for HARTS II	16-39
17-1	Satellite Communications Link Description, System A	17-21
17-2	Satellite Communications Link Description, System B	17-21
17-3	Estimated Outage Times for Fireball Intersection of the Propagation Path	17-22
17-4	Troposcatter Communication Link Description	17-27
17-5	Approximate Extent and Duration of Effects on Troposcatter Communications, Assuming Proper Burst Placement	17-28
17-6	Ionoscatter Communications Link Description	17-30
17-7	Approximate Outage Times 1000-, 1500-, and 2000-km Ionoscatter Links, Assuming Proper Burst Placement	17-31
A-1	Shock Wave Equations for an Ideal Gas	A-4
A-2	English and Metric Systems of Units	A-5
A-3	Equations for Strong Shock Waves	A-7
C-1	Standard Deviations for Use in Probability Analyses	C-4
C-2	Median Vulnerability to Overpressures Corresponding to Severe Damage of Diffraction Sensitive Structures	C-10
C-3	Median Vulnerability to Dynamic Pressures Corresponding to Severe Damage of Drag Sensitive Structures	C-11
C-4	Median Vulnerability to Overpressures Corresponding to Moderate Damage of Diffraction Sensitive Structures	C-12
C-5	Median Vulnerability to Dynamic Pressures Corresponding to Moderate Damage of Drag Sensitive Structures	C-13

[REDACTED]

## LIST OF PROBLEMS

### PART II

<i>Problem</i>	<i>Title</i>	<i>Page</i>
9-1	Calculation of Thermal Thickness of a Metal Plate .....	9-40
9-2	Calculation of Temperature Rise in a Thermally Thin Plate .....	9-43
9-3	Calculation of X-ray Energy Deposition at the Surface .....	9-71
9-4	Calculation of X-ray Energy Deposition at a Depth in a Material and the Shine Through Fluence .....	9-74
9-5	Calculation of Vapor Blowoff Impulse .....	9-113
9-6	Calculation of the Location of Phase Change Boundaries .....	9-114
10-1	Calculation of Casualties for Personnel in the Open or in a Forest .....	10-7
11-1	Calculation of Damage to Aboveground Structures from an Air Burst .....	11-14
11-2	Calculation of Damage-Distance Reduction for Surface Targets from Shallow Underground Bursts .....	11-38
11-3	Calculation of the Thickness for a Deeply Buried Reinforced Concrete Dome .....	11-60
11-4	Calculation of the Vulnerability of the Roof of a Deeply Buried, Reinforced Concrete Rectangular Structure .....	11-62
11-5	Calculation of the Thickness Required for Shallow Buried Reinforced Concrete Arch .....	11-65
11-6	Calculation of the Vulnerability of the Near Surface Portion of a Reinforced Concrete Silo .....	11-68
11-7	Calculation of the Vulnerability of Tunnels Buried in Rock .....	11-95
11-8	Calculation of the Vulnerability of Equipment Mounted in an Underground Structure .....	11-103
11-9	Calculation of Damage to POL Storage Tanks .....	11-113
11-10	Calculation of Damage to Field Fortifications .....	11-122
11-11	Calculation of the Radiant Exposure to Ignite Combustibles Indoors .....	11-132
11-12	Estimation of Fire Damage .....	11-140
12-1	Calculation of Air Blast Damage Distances to Surface Ships as a Result of Air Bursts .....	12-4
12-2	Calculation of Shock Wave Damage Distances to Surface Ships as a Result of Underwater Bursts .....	12-12
12-3	Calculation of Damage Distances for Submarines from Underwater Bursts .....	12-20
13-1	Calculation of the Aerodynamic Coefficient for Wing and Horizontal Tail .....	13-12
13-2	Calculation of the Aerodynamic Coefficient for the Vertical Tail .....	13-22

  
**LIST OF PROBLEMS (Continued)**

<i>Problem</i>	<i>Title</i>	<i>Page</i>
13-3	Calculation of Intercept-Time Envelopes that Determine Sure-Safe and Sure-Kill Regions with Respect to Material Velocity on Airplanes in Flight .....	13-29
13-4	Calculation of Intercept-Time Envelopes Determining Sure-Safe and Sure-Kill Regions with Respect to Gust Effects of the Material Velocity Behind the Blast Wave on Helicopters in Flight ....	13-39
13-5	Calculation of the Boundaries in Space that Define the Sure-Safe and Sure-Kill Regions with Respect to the Effects of Overpressure Behind the Blast Wave on Aircraft In-Flight or Parked .....	13-51
13-6	Calculation of Boundaries in Space (Envelopes) that Define the Sure-Safe and Sure-Kill Regions with Respect to Thermal Radiation on Aircraft In-Flight or Parked .....	13-60
13-7	Calculation of Burst-Time Envelopes for Gust or Overpressure Effects from Intercept-Time Envelopes .....	13-68
14-1	Calculation of Damage to Wheeled Vehicles .....	14-27
14-2	Calculation of Damage to Shielded Wheeled Vehicles .....	14-29
14-3	Calculation of Damage to Wire Entanglement .....	14-31
14-4	Calculation of Damage to Artillery .....	14-33
14-5	Calculation of the Advantage in Shielding Engineer Heavy Equipment .....	14-35
15-1	Calculation of Air Blast Damage to Forest Stands .....	15-5
15-2	Calculation of the Distance at Which Movement Will Be Impaired .....	15-50
15-3	Estimation of Movement Difficulty .....	15-51
15-4	Calculation of the Requirements for Wildland Kindling Fuel Ignition .....	15-54
16-1	Calculation of Hardness Level! .....	16-43
16-2	Calculation of Load Characteristics, Fireball Traversal Time and Total Traversal Time .....	16-53
B-1	Use of Fractional Power Curves and Dimension Scaling Nomogram .....	B-5



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Water Surface Phenomena						
Thermal Radiation Phenomena						
X-Ray Radiation Phenomena						
Nuclear Radiation Phenomena						
Initial Nuclear Radiation						
Neutron Induced Activity						
Residual Radiation						
Transient Radiation Effects on Electronics Phenomena						
TREE Phenomena						
Electromagnetic Pulse Phenomena						
EMP Phenomena						
Phenomena Affecting Electromagnetic Wave Propagation						
Blast and Shock Damage						
Thermal Radiation Damage						
X-Ray Damage						
Nuclear Radiation Shielding						
TREE Damage Mechanisms						
EMP Damage						
Personnel Casualties						
Blast Injury						
Thermal Injury						
Nuclear Radiation Injury						
Combined Injury						
Damage to Structures						
Shock Vulnerability of Equipment and Personnel						
Damage to Field Fortifications						
Damage to Dam and Harbor Installations						
Damage to POL Tanks						
Fire in Urban Areas						
Damage to Naval Equipment						
Damage to Surface Ships						
Damage to Subsurface Ships						
Damage to Aircraft						
Damage to Military Field Equipment						
Air Blast Damage to Military Field Equipment						
Thermal Damage to Military Field Equipment						
TREE Damage to Military Field Equipment						
Forest Stand Damage						
Air Blast in Forest Stands						
Blowdown						
Thermal Damage in Forests						
Forest Blowdown Effects on Mobility						
Damage to Missiles						
Radio Frequency Signal Degradation Relevant to Communications Systems						
Radio Frequency Signal Degradation Relevant to Radar Systems						

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